



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
07.01.2004 Bulletin 2004/02

(51) Int Cl.7: **H04L 29/06, G07F 19/00**

(21) Application number: **02013844.2**

(22) Date of filing: **22.06.2002**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR
 Designated Extension States:
AL LT LV MK RO SI

- **Schuba, Marko**
52134 Herzogenrath (DE)
- **Brandrud, Knut**
0680 Oslo (NO)

(71) Applicant: **TELEFONAKTIEBOLAGET LM**
ERICSSON (publ)
126 25 Stockholm (SE)

(74) Representative: **Mohsler, Gabriele**
Ericsson Eurolab Deutschland GmbH,
Patent Department,
Ericsson Allee 1
52134 Herzogenrath (DE)

(72) Inventors:
 • **Zavagli, Guido, c/o Nippon Ericsson K.K.**
Bunkyo-ku 112-0004 (JP)

(54) **Method for providing information to a web server**

(57) The invention relates to a method for providing information related to a client (C) to a first web server (WS1). The invention further relates to a proxy server, a program unit loadable into a proxy server, a web server, and a program unit loadable into a web server, all of them to perform the invented method. A second web server (WS2) stores the information related to the client (C), and the first web server (WS1) is connected to the client (C) via a proxy server (PS). The proxy server stores a cookie for the first web server (WS1), the cookie being related to the client (C) and the cookie comprising

a network address of the second web server (WS2). The client (C) sends a message towards the first web server (WS1) via the proxy server (PS). The message is received in the proxy server (PS), that inserts the cookie into the message, and forwards the message to the first web server (WS1). The first web server (WS1) receives the message, retrieves the network address of the second web server (WS2) from the cookie, and requests the second web server (WS2) for the information related to the client (C). The second web server (WS2) sends information related to the client (C) to the first web server (WS1).

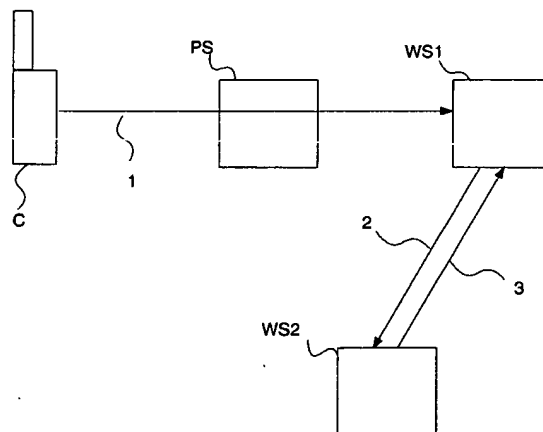


Fig. 1

Description

Field of invention

[0001] The invention relates to method for providing to a web server information that is related to a client. The invention further relates to a proxy server, a program unit loadable into a proxy server, a web server, and a program unit loadable into a web sever, all of them to perform the invented method.

Description of prior art

[0002] In the Internet a first web server can be connected to a client for providing a service to the client. The first web server may demand information related to the client that is held by a second web server. An example for the information related to the client is the acknowledgement of a mobile payment, that has to be performed before a service can be offered to the client by the web server. In this example the second web server can be a payment server e.g. a secure electronic transaction wallet server.

Further examples are an electronic mail held by an electronic mail server, an authentication to be performed by an authentication server, or an electronic ticket that is provided by a ticketing server. To access the information related to the client, the IP address of the second web server has to be provided to the first web server.

[0003] A solution to that problem was proposed in "Card Payment Transactions in an m-Commerce Environment - Feasibility Study" by Konrad Wrona and Terence Trench, Wireless Application Part Forum Meeting, Munich, 10th to 15th December 2000. According to this solution, a mapping is provided between a network address of the client and the web address of the second web server in a third web server. This solution poses the problem of maintaining the third web server providing the mapping between the network address of the client and the web address of the second web server. This is especially difficult if the number of mappings between network addresses of clients and web addresses of web servers is high, and said functionality of mapping between the two address types has to be distributed within the network.

[0004] Therefore it is subject of the invention to present a simple method to provide information that is related to a client to a web server.

Summary of the invention

[0005] This object is achieved by the methods of claims 1, 2 and 5, the proxy server of claim 11, the program unit loadable into a proxy server according to claim 12, the web server according to claim 13, and the program unit loadable into a web server according to claim 14. Advantageous embodiments are described in dependent claims.

[0006] It is an advantage of the proposed method that the network address of the second sever is stored in a proxy server and only one proxy server is related to the client. This is advantageous as the network address of the second server can be maintained easily in the proxy server. Further advantageous is, that the network address of the second server is sent during a session between the client and the web server thus avoiding the need of contacting a third web server.

[0007] Advantageous is a method wherein the cookie is sent to the proxy server in a session according to a hypertext transfer protocol by the second web server. This is a simple method to provide the network address of the second web server to the proxy server as the second web server is holding its network address.

[0008] In another advantageous embodiment the request to the second web server is sent via the client. This is advantageous as the existing session between the client and the web server can be used for sending the request.

[0009] A simple method for requesting and providing information related to a client to a web server is especially required if the information authenticates or authorizes the client towards the web server.

Brief description of the drawings

[0010]

Fig. 1 shows an architecture and a signal flow using the invented method and

Fig. 2 shows an alternative signal flow using the invented method.

Detailed description of embodiments

[0011] In the following the invention is described in more detail by means of embodiments and figures. Equal reference signs indicate equal elements.

[0012] Figure 1 depicts an example of an architecture and a signal flow for using the invented method. It shows a client C connected to a first web server WS via a proxy server PS. Figure 1 further shows a second web server WS2. A message 1 that is sent from the client C to the first web server WS1, a request 2 from the first web server WS1 to the second web server WS2 and a response 3 from the second web server WS2 to the first web server WS1 are depicted as arrows. The contents of the message 1, the request 2 and the response 3 is described together with the description of the signal flow depicted in figure 2.

[0013] Figure 2 depicts an alternative signal flow according to the invention. It shows a client C2 connected to a first web server WS12 and to a second web server WS22 via a proxy server PS2. The alternative signal flow contains a message 12 that is sent from the client C2 to the first web server WS12 via the proxy server

PS2, a request 22 that is sent from the first web server WS12 to the second web server WS22 via the client C2 and a response 32 from the second web server WS22 to the first web server WS12 via the client C2. The message 12, the request 22 and the response 32 are depicted as arrows.

[0014] The client C, C2 can be a mobile terminal and the proxy server PS, PS2 can be a wireless application protocol gateway or a hypertext transfer protocol proxy server. The user of the client C, C2 is requesting a first service from a first service provider that is offering the service via a first web server WS1, WS12. The service can be a service for offering digital content, a service for supplying the user of the client C, C2 with a physical good or any other service. If the service is a service for offering digital content, the first web server WS1, WS12 can be for example a multimedia server storing multimedia streams. The user of the client C, C2 is subscribed at a second service provider that is offering a further service via a second web server WS2, WS22 to the user of the client C, C2. Said further service can be for example be a service for authentication or authorization or a service for electronic payments. The second web server WS2, WS22 can be for example an electronic mail server, an authentication server, a ticketing server, or a payment server such as a secure electronic transaction wallet server. The second web server WS2 can e.g. provide rights related to a service provided by the first server WS1, WS12 to the user of the client C, C2. To this end the second web server WS2, WS22 can store authentication data, electronic tickets, or data related to electronic payments for the user of the client C, C2.

[0015] The client C, C2 establishes a connection to the second web server WS2, WS22 via the proxy server PS, PS2. If the client C, C2 is a mobile terminal and the proxy server PS, PS2 is a wireless application protocol gateway the connection between the client C, C2 and the second web server WS2, WS22 can comprise a first connection between the client C, C2 and the proxy server PS, PS2 over a wireless application protocol and a second connection between the proxy server PS, PS2 and the second web server WS2, WS22 over a hypertext transfer protocol. Alternatively the proxy server PS, PS2 can be a hypertext transfer protocol proxy server and the connection between the client C, C2 and the second web server WS2, WS22 can comprise a first connection between the client C, C2 and the proxy server PS, PS2 over the hypertext transfer protocol and a second connection between the proxy server PS, PS2 and the second web server WS2, WS22 via the hypertext transfer protocol. To provide connections according to the wireless application protocol to clients of a first kind and connections according to the hypertext transfer protocol to clients of a second kind the proxy server PS, PS2 can provide both the functionality of a wireless application protocol gateway and the functionality of a hypertext transfer protocol proxy server.

[0016] The second web server WS2, WS22 sends a message containing a cookie to the proxy server PS, PS2 in a session according to the hypertext transfer protocol, the cookie being related to the client C, C2 and the cookie comprising a network address of the second web server WS2, WS22. The proxy server PS, PS2 stores the cookie for the first web server WS1, WS12.

[0017] The client C, C2 establishes a connection to the first web server WS1, WS12 via the proxy server PS, PS2, for example for receiving digital content from the first web server WS1, WS12.

[0018] The first web server WS1, WS12 demands information related to the client C, C2, the information being stored by the second web server WS2, WS22. The information can be for example a ticket allowing access to digital content provided by the first web server WS1, WS12 or information authenticating the user of the client C, C2 towards the first web server WS1, WS12. The information can authorize the user of the client C, C2 towards the first web server WS1, WS12 or the information can be related to a payment for a service, a physical good or digital content that is provided by the first web server WS1, WS12.

[0019] The client C, C2 sends a message 1, 12 towards the first web server WS1, WS12 via the proxy server PS, PS2. The proxy server PS, PS2 receives the message 1, 12, inserts the cookie into the message 1, 12 and forwards the message 1, 12 towards the first web server WS1, WS12 for providing the network address of the second server WS2, WS22 to the first web server WS1, WS12. The first web server WS1, WS12 receives the message 1, 12 containing the cookie, retrieves the network address of the second web server WS2, WS22 from the cookie and requests 2, 22 the second web server WS2, WS22 for the information related to the client C, C2. In the alternative signal flow according to figure 2 the request 22 to the second web server WS22 is sent towards the client C2 and redirected or forwarded by the client C2 to the second web server WS22.

[0020] The second web server WS2, WS22 sends the information related to the client C, C2 to the first web server WS1, WS12 in a response 3, 32. In the alternative signal flow according to figure 2 the response 32 is sent via the client C2. The first web server WS1, WS12 receives the information related to the client C, C2. The received information can authenticate or authorize the client C, C2 towards the first web server WS1, WS12. According to the information received from the second web server WS2, WS22 the first web server WS1, WS12 can decide to provide a service to the user of the client C, C2. The first web server can e.g. decide to provide access to a digital content, or supply a physical good to the user of the client C, C2 depending on the information received from the second web server WS2, WS22.

[0021] In a preferred embodiment of the invention a proxy server PS, PS2 for a communication network using the invented method comprises a memory for storing a cookie, interfaces for sending and receiving messag-

es, and a processing system that that is adapted to receive in a session according to the hypertext transfer protocol a cookie comprising the network address of the second web server WS2, WS22. The processing system is adapted to store a cookie for the first web server WS1, WS12, wherein the cookie is related to the client C, C2 and comprises a network address of the second web server WS2, WS22. The processing system is adapted to receive a message 1, 12 that is addressed to the first web server WS1, WS12, to insert the cookie into the message 1, 12, and to forward the message 1, 12 to the first web server WS1, WS12.

[0022] A program unit for use of the proposed method is loadable into a proxy server PS, PS2 in a communication network. The program unit can for example be stored on a data carrier, e.g. a magnetic or optical recording medium. It can also be embodied as a sequence of signals loadable into a proxy server PS, PS2, e.g. over a data link. The program unit comprises code adapted to store a cookie for a first web server WS1, WS12, wherein the cookie is related to the client C, C2 and the cookie comprises a network address of a second web server WS2, WS22. The program unit is adapted to process messages, said messages comprising a message 1, 12 for the first web server WS1, WS12 from the client C, C2. The program unit further comprises code adapted to insert the cookie into the message 1, 12 and to forward the message 1, 12 towards the first web server WS1, WS12.

[0023] In a preferred embodiment of the invention a web server WS1, WS12 for a communication network using the invented method comprises interfaces for sending and receiving messages. The web server WS1, WS12 further comprises a processing system that is adapted to retrieve an address of a second web server WS2, WS22 from a cookie and to send a request for information related to a client C, C2 towards the second web server WS2, WS22.

[0024] A further program unit for use of the proposed method is loadable into a web server WS1, WS12 for a communication network. Said further program unit can for example be stored on a data carrier, e.g. a magnetic or optical recording medium. It can also be embodied as a sequence of signals loadable into a web server, e.g. over a data link. The further program unit comprises code adapted to process messages, said messages comprising a message 1, 12 from a proxy server PS, PS2 and a request 2, 22 towards a second web server WS2, WS22. The message 1, 12 from the proxy server PS, PS2 comprises a cookie with a network address of the second web server WS2, WS22. The request 2, 22 towards the second web server WS2, WS22 demands information related to the client C, C2. The further program unit comprises code adapted to retrieve the network address of the second web server WS2, WS22 from the cookie, and to send the request 2, 22 for information related to the client C, C2 towards the second web server WS2, WS22.

Claims

1. Method for providing information related to a client (C; C2) to a first web server (WS1; WS12), wherein a second web server (WS2; WS22) stores the information related to the client (C; C2), and the first web server (WS1; WS12) is connected to the client (C; C2) via a proxy server (PS; PS2), the method comprising the steps of:
 - storing a cookie for the first web server (WS1; WS12) in the proxy server (PS; PS2), the cookie being related to the client (C; C2) and the cookie comprising a network address of the second web server (WS2; WS22),
 - sending a message (1; 12) towards the first web server (WS1; WS12) via the proxy server (PS; PS2),
 - receiving the message (1; 12) in the proxy server (PS; PS2),
 - inserting the cookie into the message (1; 12),
 - forwarding the message (1; 12) to the first web server (WS1; WS12),
 - receiving the message (1; 12) in the first web server (WS1; WS12),
 - retrieving the network address of the second web server (WS2; WS22) from the cookie,
 - requesting (2; 22) from the second web server (WS2; WS22) the information related to the client (C; C2),
 - receiving in the second web server (WS2; WS22) the request (2; 22) for information related to the client (C; C2), and
 - sending (3; 32) information related to the client (C; C2) to the first web server (WS1; WS12).
2. Method for providing information related to a client (C; C2) to a first web server (WS1; WS12), the information being stored by a second web server (WS2; WS22), wherein the first web server (WS1; WS12) is connected to the client (C; C2) via a proxy server (PS; PS2), and wherein the following steps are performed by the proxy server (PS; PS2):
 - storing a cookie for the first web server (WS1; WS12), wherein the cookie is related to the client (C; C2) and comprises a network address of the second web server (WS2; WS22),
 - receiving a message (1; 12) that is addressed to the first web server (WS1; WS12),
 - inserting the cookie into the message (1; 12), and
 - forwarding the message (1; 12) to the first web server (WS1; WS12).
3. Method according to claim 2, wherein the client (C; C2) is a mobile terminal, the proxy server (PS; PS2) is at least one of a wireless application protocol

- gateway or a hypertext transfer protocol proxy server, and wherein the connection of the client (C; C2) to the first web server (WS1; WS12) comprises a first connection between the client (C; C2) and the proxy server (PS; PS2) according to a wireless application protocol or a hypertext transfer protocol and a second connection between the proxy server (PS; PS2) and the first web server (WS1; WS12) according to a hypertext transfer protocol.
4. Method according to claim 2 or 3, wherein the cookie is sent to the proxy server (PS; PS2) in a session according to a hypertext transfer protocol by the second web server (WS2; WS22).
 5. Method for requesting by a first a web server (WS1; WS12) information related to a client (C; C2) from a second web server (WS2; WS22) holding the information related to the client (C; C2), the method comprising the following steps:
 - receiving a message (1; 12) with a cookie comprising a network address of the second web server (WS2; WS22) from a proxy server (PS; PS2),
 - retrieving the network address of the second web server (WS2; WS22) from the cookie,
 - requesting (2; 22) from the second web server (WS2; WS22) the information related to the client (C; C2).
 6. Method according to claim 5, wherein the request (22) to the second web server (WS22) is sent via the client (C2).
 7. Method according to claim 5 or 6, wherein the first web server (WS1; WS12) receives the information related to the client (C; C2).
 8. Method according to claim 7, wherein the information related to the client (C; C2) authenticates the client (C; C2) towards the web server.
 9. Method according to claims 7 or 8, wherein the information related to the client (C; C2) authorizes the client (C; C2) towards the web server.
 10. Method according to any of the claims 5 to 9, wherein the second web server (WS2; WS22) is at least one of a payment server, an electronic mail server, an authentication server, or a ticketing server.
 11. Proxy server (PS; PS2) for a communication network, wherein the proxy server (PS; PS2) comprises a memory for storing a cookie, interfaces for sending and receiving messages, **characterized by** a processing system that is adapted to perform the method according to any of the claims 2 to 4.
 12. Program unit loadable into a proxy server (PS; PS2) in a communication network, wherein the program unit comprises code adapted to store a cookie for a first web server (WS1; WS12), wherein the cookie is related to the client (C; C2) and comprises a network address of a second web server (WS2; WS22), wherein the program unit is adapted to process messages, said messages comprising a message (1; 12) for the first web server (WS1; WS12) from the client (C; C2) and wherein the program unit comprises code adapted to insert the cookie into the message (1; 12) and to forward the message (1; 12) towards the first web server (WS1; WS12).
 13. Web server in a communication network, comprising interfaces for sending and receiving messages and a processing system that is adapted to retrieve an address of a second web server (WS2; WS22) from a cookie and to send a request for information related to a client (C; C2) towards the second web server (WS2; WS22).
 14. Program unit loadable into a web server in a communication network, wherein the program unit comprises code adapted to process messages, said messages comprising a message (1; 12) from a proxy server (PS; PS2) and a request (2; 22) towards a second web server (WS2; WS22), wherein the message (1; 12) from the proxy server (PS; PS2) comprises a cookie with a network address of the second web server (WS2; WS22), the request (2; 22) towards the second web server (WS2; WS22) demands information related to the client (C; C2), and wherein the program unit comprises code adapted to retrieve the network address of the second web server (WS2; WS22) from the cookie, and to send the request (2; 22) for information related to the client (C; C2) towards the second web server (WS2; WS22).

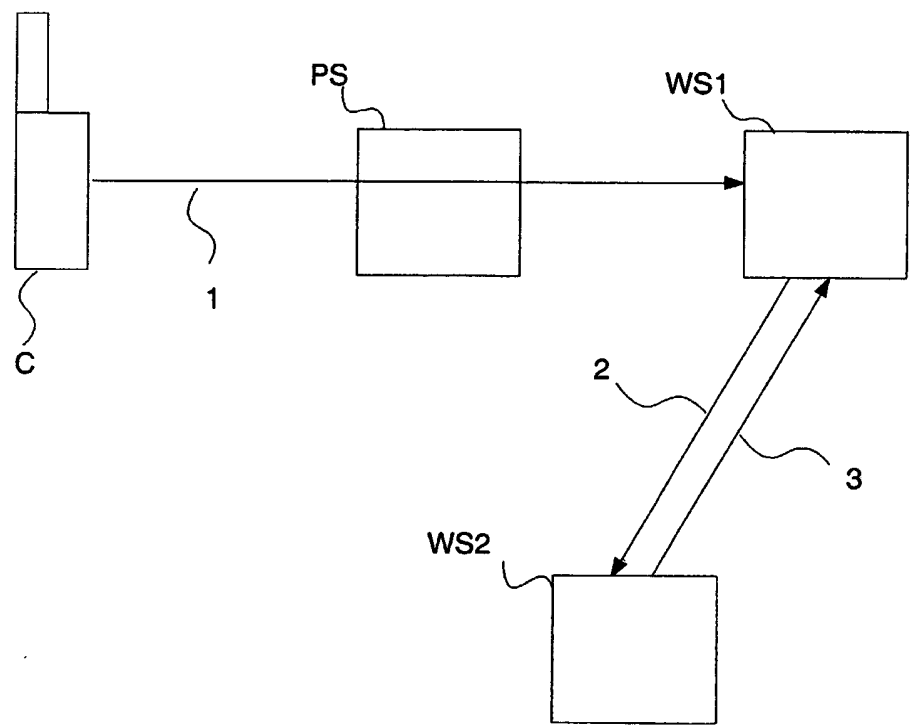


Fig. 1

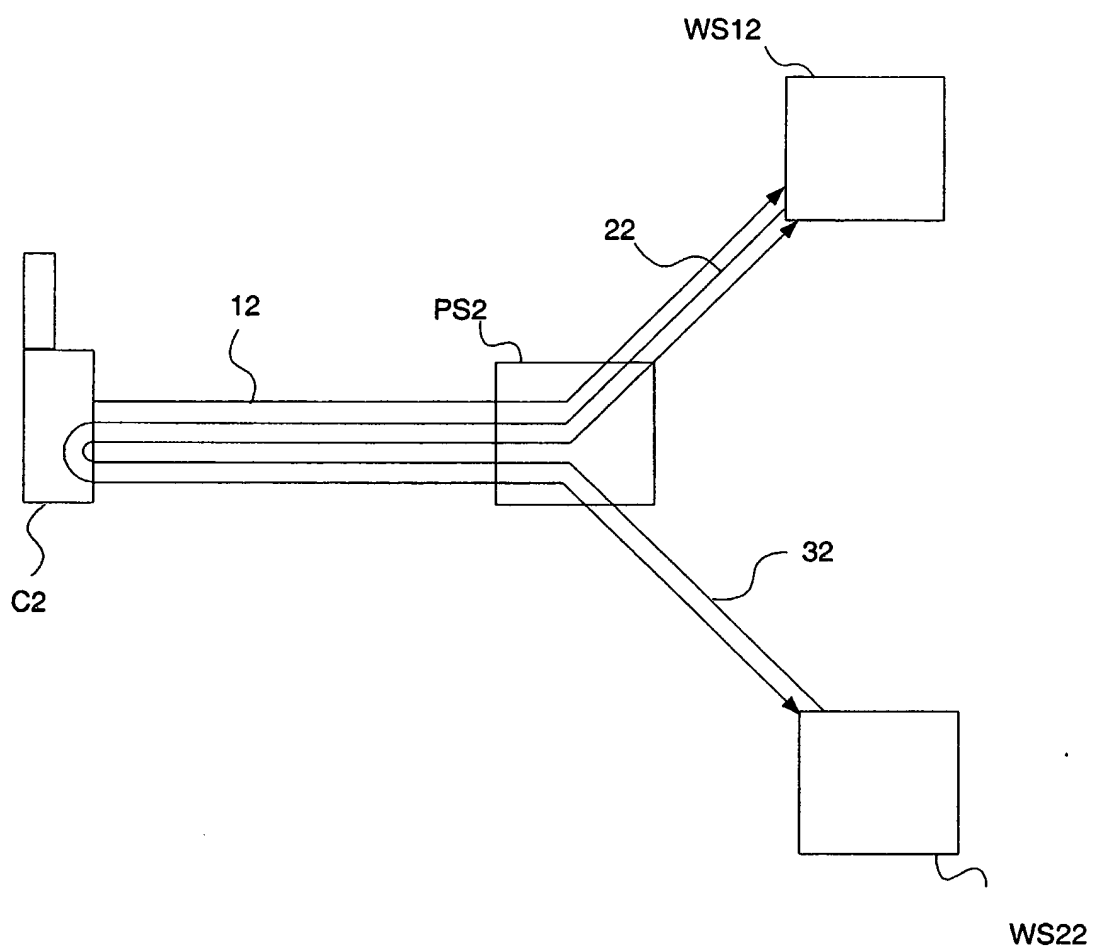


Fig. 2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 01 3844

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	MET: "MeT Authorization for account based payment using a SET Wallet Server" MET (MOBILE ELECTRONIC TRANSACTIONS) STANDARD, [Online] 21 February 2001 (2001-02-21), pages 1-15, XP002221755 Retrieved from the Internet: <URL:http://www.mobiletransaction.org/pdf/MeT-SET-Wallet-20010221.pdf> [retrieved on 2002-11-20]	5-10,13,14	H04L29/06 G07F19/00
A	* sections 1., 4., 6.4, 7. * * figure 3 *	1,2,11,12	
X	US 6 157 917 A (BARBER TIMOTHY P) 5 December 2000 (2000-12-05) * abstract *	2,3,5-14	
A	* column 6, line 50 - column 7, line 3 *	1	
A	"SET Secure Electronic Transaction Specification, Book 1: Business Description" SET SPECIFICATIONS, 31 May 1997 (1997-05-31), XP002100669 * page 59 *	5,13,14	TECHNICAL FIELDS SEARCHED (Int.Cl.7) H04L G07F
A	US 5 875 296 A (AULT MICHAEL BRADFORD ET AL) 23 February 1999 (1999-02-23) * abstract *	5,13,14	
A	WO 01 93092 A (NOKIA NETWORKS OY ;LAHTI JERRY (FI); KERAENEN TUOMAS (FI)) 6 December 2001 (2001-12-06) * page 2, line 3 - line 20 *	1-3,11,12	
A	WO 02 17253 A (SCHUBA MARKO ;WRONA KONRAD (DE); ZAVAGLI GUIDO (JP); ERICSSON TELE) 28 February 2002 (2002-02-28) * page 19, line 29 - page 20, line 22 *	4	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 20 November 2002	Examiner Kesting, V
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03 02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 02 01 3844

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-11-2002

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 6157917	A	05-12-2000	NONE		

US 5875296	A	23-02-1999	JP	3003997 B2	31-01-2000
			JP	10257048 A	25-09-1998

WO 0193092	A	06-12-2001	AU	6397301 A	11-12-2001
			WO	0193092 A1	06-12-2001

WO 0217253	A	28-02-2002	EP	1182625 A1	27-02-2002
			AU	7851401 A	04-03-2002
			WO	0217253 A1	28-02-2002
			US	2002052842 A1	02-05-2002

THIS PAGE BLANK (USPTO)